

July 18, 2022

Mr. Caleb Grubb  
Grubb Construction  
234 West Hammond Street  
Sequim, WA 98382

Re: Proposed Single Family Residence  
261 West Spruce Street  
Parce B, Grubb Short Plat  
Clallam County Parcel No. 03-30-19-51-1208

Dear Caleb:

As requested, I have reviewed the referenced lot to determine whether the onsite soils would be suitable for infiltration as a means of storm water runoff disposal. This review included a review of soil survey data for the area, inspection of the onsite soils and sieve analysis of soil sample taken from the site.

The NRCS soil Survey of Clallam County (USDA) indicates that the onsite soils are mapped as Sequim very gravelly sandy loam. The typical profile for these soils is as follows: 0-10 inches very gravelly sandy loam, 10 to 23 inches extremely cobbly loamy sand, 23 to 60 inches extremely cobbly sand. Typical depth to water table or other restrictive feature is greater than 80 inches. These soils are classified as somewhat excessively drained soils (Hydrologic soil group A).

One onsite test pit was excavated in the southwest corner of the site to a depth of approximately 6 feet and found soils consistent with the mapped soil type.

Test Pit #1	
0-6"	Topsoil
6-24"	Very Cobbly Loamy Sand
24-72"	Extremely Cobbly Sand

A grab sample was taken at approximately 36 inches deep and a sieve analysis was conducted on the sample. The sieve analysis identified the soils in the sample as GM or GC (Gravels with more than 50% of the coarse fraction retained on the #4 sieve). Correlation of infiltration rate from the soil grain size analysis method estimated in Section III-3.3.6 estimates a long-term infiltration rate of approximately 34 inches per hour.

Based on the findings above, these soils are acceptable for infiltration. Consistent with sizing criteria per the *2012 Stormwater Management Manual for Western Washington (ECY, amended 2014)* the recommended size for drywells is 60 cubic feet of drywell per 1,000 square feet of roof area. The top of the trench should be a minimum of 12" below the base of footings for the proposed residence. The trench/drywell should be covered with filter fabric prior to backfill.

Additionally, runoff from the driveway should be directed to a rain garden sized to provide a minimum ponded surface area of 5% of the impervious area draining to the rain garden.

Please contact this office if there are any questions regarding this matter.

Sincerely,  
Zenovic & Associates, Inc.

Seth J. Rodman, P.E.  
Senior Design Engineer  
Fc: JN 22174



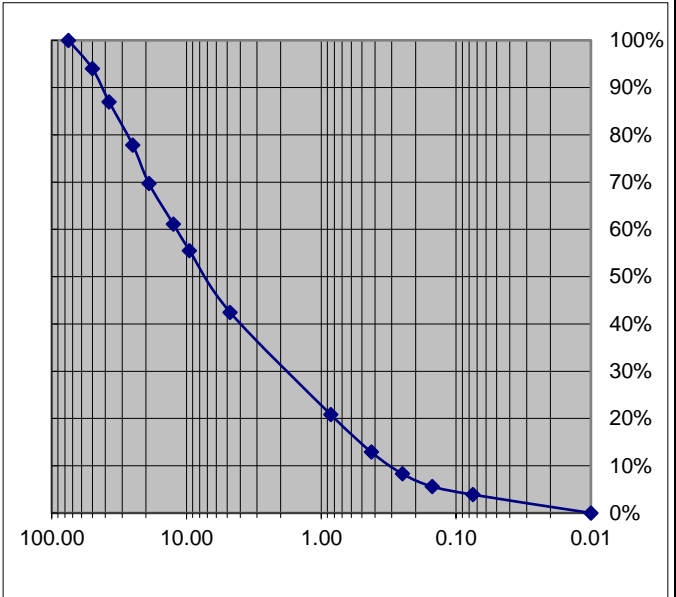
7/18/2022



ASTM C136 - SIEVE ANALYSIS OF FINE AND COARSE  
 AGGREGATE  
 D10/ D30/ D60/ D90 DETERMINATION

DATE: 6/14/2022  
 CLIENT: Zenovic & Associates  
 ADDRESS: 301 East 6th St. Suite 1, PA WA  
 EMAIL: [zenovic@olympus.net](mailto:zenovic@olympus.net)  
 PROJECT:  
 MATERIAL TYPE: GM or GC  
 MATERIAL SOURCE: 261 W. Spruce  
 TESTED BY: Shawn West  
 SAMPLE ID: 2845-29

DIA -MM	Sieve Size	Wt. (grams)	% Retained	% Passing
75.000	3"	0.0	0.0%	100.0%
50.000	2"	1491.4	6.0%	94.0%
37.500	1 1/2"	1760.1	7.0%	87.0%
25.000	1"	2294.6	9.2%	77.8%
19.000	3/4"	2022.0	8.1%	69.7%
12.500	1/2"	2151.3	8.6%	61.1%
9.500	3/8"	1400.6	5.6%	55.5%
4.750	No. 4	3256.2	13.0%	42.5%
0.850	No. 20	5411.5	21.7%	20.8%
0.425	No. 40	1978.1	7.9%	12.9%
0.250	No. 60	1148.5	4.6%	8.3%
0.150	No. 100	673.9	2.7%	5.6%
0.075	No. 200	427.7	1.7%	3.9%
	Pan	968.8	3.9%	



D10	D30	D60	D90
0.31	1.8	10.3	13.2
End Weight:		24015.9	Cu: 33.23
Start Weight:		24984.7	Cc: 1.01
Washed Weight:		968.8	

REMARKS:

Material sampled by Zenovic and Associates. Material was tested using ASTM C 136 Procedure A.

**INFILTRATION RATE CALCULATION - GRAIN SIZE ANALYSIS**

ZENOVIC & ASSOCIATES  
 301 EAST 6TH STREET, SUITE 1  
 PORT ANGELES, WA 98362  
 DATE: 7/18/2022  
 JOB NO. 22174  
 AUTHOR: SJR

**PROJECT:** Grubb Const. Spec House  
**LOCATION:** 261 West Spruce Street, Sequim  
**PARCEL NO:** 03-30-19-51-1208

**Location TP #1**

D10	0.31
D60	10.3
D90	13.2
%Fines	0.039

K <sub>sat</sub> initial (cm/s)	0.083
CF <sub>v</sub>	0.8
CF <sub>t</sub>	0.4
CF <sub>m</sub>	0.9
K <sub>sat</sub> design (cm/s)	0.0240
K <sub>sat</sub> design (in/hr)	<u>34.0</u>

**Location TP #2**

D10	
D60	
D90	
%Fines	

K <sub>sat</sub> initial (cm/s)	
CF <sub>v</sub>	0.8
CF <sub>t</sub>	0.4
CF <sub>m</sub>	0.9
K <sub>sat</sub> design (cm/s)	0.0000
K <sub>sat</sub> design (in/hr)	<u>0.0</u>

**Location TP #3**

D10	
D60	
D90	
%Fines	

K <sub>sat</sub> initial (cm/s)	
CF <sub>v</sub>	0.8
CF <sub>t</sub>	0.4
CF <sub>m</sub>	0.9
K <sub>sat</sub> design (cm/s)	0.0000
K <sub>sat</sub> design (in/hr)	<u>0.0</u>

$$\log_{10}(K_{sat}) = -1.57 + 1.90D_{10} + 0.015D_{60} - 0.013D_{90} - 2.08f_{fines}$$

Total Correction Factor,  $CF_T = CF_v \times CF_t \times CF_m$

$K_{sat\ design} = K_{sat\ initial} \times CF_T$

Issue	Partial Correction Factor
Site variability and number of locations tested	CF <sub>v</sub> = 0.33 to 1.0
Test Method	
Large-scale PIT	CF <sub>t</sub> = 0.75
Small-scale PIT	= 0.50
Other small-scale (e.g. Double ring, falling head)	= 0.40
Grain Size Method	= 0.40
Degree of influent control to prevent siltation and bio-buildup	CF <sub>m</sub> = 0.9